FLEXLINE™

ONLINE STORAGE SYSTEMS

INSTALLATION INSTRUCTIONS FOR SOLARIS
Open Systems Host Attach

PRODUCT TYPE
SOLUTIONS

FlexLine™ 200/300 Series

Installation Instructions for SOLARIS open systems disk host attach

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200/300 Series Program Manager
Storage Technology Corporation
One StorageTek Drive
Louisville, CO 80028-2129

or sent email to: **glsfs@stortek.com**

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Summary of Changes

The following is the history and summary of changes for this publication.

Date	Edition	Description
October 2003	First	Initial Release
October 2004	Second	Updated to reflect new FlexLIne™ terminology

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Solaris - Installation Instructions

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The following pages help ensure that you order and configure a viable solution for your SUN operating environment running Solaris 2.7, 2.8, or 2.9 (and appropriate patches - see). Customers and StorageTek personnel should also be familiar with the FlexLine™ 200/300 Series storage system Site Preparation Guide, the Storage Manager Concepts Guide, and the Storage System Planning Checklist.

■ Introduction

This manual is organized to help plan your SUN Solaris configuration, provide order information, and help to install and attach your storage system to the SUN host server running Solaris. The following should be used in conjunction with the Siebel configurator.

Plan your site configuration

Prior to placing an order for StorageTek storage equipment, one should make sure of the system needs. First measure the locations of each current and future host, storage system, and other network components. Fill in this form with the requested information.

✔	Parameter	Outcome
	Solaris operating system	
	Distance between host and storage system	
	Distance between other devices	
	Number of HBAs needed (two are recommended)	
	Number of storage systems being installed	
	Number of FC cables needed	

Select Host Adapter (s)

Pick the type and quantity of the fibre channel Host Bus Adapters (HBAs) needed for your host systems. Refer to the Interop Tool for connectivity information.

Select the Fibre Channel Cables

Select the length of fiber optic (or copper) cable and the quantity for connection to the host systems. The following is an example of optical cables that may be ordered through StorageTek to attach a QLA2300F HBA to the Control Module (aka Controller). Write in the quantities needed.

Quantity	2 Gb FC Optical Cable Description	Part #
	10 meters (32.8 feet) LC to LC Duplex	10800221
	50 meters (164 feet) LC to LC Duplex	10800222
	100 meters (328 feet) LC to LC Duplex	10800223
Note: Other lengths are available. Consult the Siebel Configurator.		

There are also LC to SC cables that would allow one to use a 2 Gb HBA and cables with existing switches. The following cables are available in this event.

Quantity	FC Optical Cable Description	Part #
	10 meters (32.8 feet) LC to SC	10800231
	50 meters (164 feet) LC to SC	10800232
	100 meters (328 feet) LC to SC	10800233

If installing through a switch, you may need a set of the following.

Quantity	1 Gb FC Optical Cable Description	Part #
	10 meters (32.8 feet) SC to SC Duplex	10800134
	50 meters (164 feet) SC to SC Duplex	10800137
	100 meters (328 feet) SC to SC Duplex	10800138
Note: Other lengths are available. Consult the Siebel Configurator.		

Check your quantities against your earlier distance measurements to ensure your order includes all cable attachments. Also, if ordering copper cables, make sure that the connector ends meet your need. One end mates with the HBA, and the other end, typically, mates with the control module's host interface minihubs (or array module host ports).

Note: Unless there is an existing management station, cable connections to the management station should be via 10BaseT Ethernet.

Typically, LC to LC Duplex Fibre Channel short wave optical cables are used with the HBAs and the controller's host minihubs, which have Small Form Factor Packaged (SFP) Transceivers.

Place your Order

Make sure that you have the following.

✔	Description
	SUN Server running Solaris 2.7, 8, or 9 (and appropriate patches)
	HBA(s)
	Fibre Channel cables to configure your subsystem

When you make a new order, a CD-ROM along with a CD insert, commonly called a Quick Start Guide will be in your host attach kit. The Quick Start Guide will walk you through your installation—first referring you to the Preconfiguration and Maintenance Setup Instructions, P/N 95966, and then to any special instructions written to support your particular operating system installation.

CD-ROM file structure

During your installation you will be asked to install files from the CD supplied in your host-attach kit. The CD is structured (in most cases) with two main folders (Docs and Software). Inside the Docs folder are subfolders with pertinent documentation. The following table shows the subfolder names.

Sales and Preinstall	Diagnostic and Service	Engineering Papers
Hardware Install	Cabinet Docs	Miscellaneous
Software Install	Release Notes	

Inside the Software folder you will find files called: client, agent, runtime, RDAC, and utilities.

> **Note:** Some operating systems will have additional directories such as a Host Adapter, MIBs, or a Drivers folder.

A special SMclient (Field Tool) CD is available and required to fulfill your preconfiguration requirements. It has special software tasks and applications that may be necessary to upgrade your storage system.

Note: Refer also to the PDF documents and configuration and support files to assist with your installation, and use the Interop Tool to get the latest connectivity information.

■ Storage System and Storage Manager - Overview

FlexLine™ 200/300 Series storage systems provide access to high-end storage using Fibre Channel and RAID technology.

This document was created to aid in installing a storage system into a Solaris operating environment. It includes driver information, steps to take when planning and assembling a SAN installation, and a list of frequently asked questions (and problems) that may be encountered. This manual is intended to provide tips on attaching or creating a SAN environment as well as giving some examples of problems that have been encountered.

In addition to this manual, information is available on the CRC by going to Current Products >> Disk or Current Products >> Software. The CRC also has tech tips, FAQs, notices and bulletins, and software updates.

Note: Firmware and NVSRAM updates may be downloaded from the CRC.

Backup documentation is on the engineering web page at:

http://gandalf.stortek.com/ctp/index.html

■ Installation

Once you have ordered your hardware and software, read the following information on how to attach your storage system to a SUN Server running Solaris 2.7, 8, or 9 (and appropriate patches).

Before You Begin

The materials needed for the installation are listed below. Check to see that you have each of these items. The following pages provide more information about these materials (see headings) with specific steps and details on what to do.

Before you begin, make sure you have these items:

1. A SUN Server running Solaris 2.7, 8, or 9 (and appropriate patches)

2. One or more HBA(s)—appropriate to your storage system

3. SFP Transceivers for the Control Module/Array Module/Drive Module(s)

4. Fibre Channel cable(s) that will connect the host to the storage system

5. A storage system that is fully configured.

Note: If you don't have your storage system configured, you can attach your laptop running the latest SMclient Field Tool to it. This will enable you to assign drives, LUNs, and volumes.

Table 1. Solaris Patches (minimum versions)

Solaris 2.6	refer to manual 96096
Solaris 7	106541-11 Kernel jumbo patch 107078-18 OpenWindows patch
Solaris 8	06 jumbo patch
Solaris 9	112233-06 **Notes:** Two Terabyte support requires patches 113998-05 and 113993-06

Refer to the SANtricity Storage Manager version 9.1 Installation Guide for Solaris, which will have the latest patch levels required to run your 200/300 Series solution.

Preliminary Steps

Do the following prior to the installation.

Check your operating system and patch revision levels

Use the following commands to assist you.

```
# uname -a
# showrev -p
```

Install the Storage System

Refer to the appropriate storage system Site Preparation Guide and hardware installation documents, as needed. Do NOT, however, attach fibre channel cables at this time.

After placing the hardware, refer to the Preconfiguration and Maintenance Setup Instructions, P/N 95966, and the Storage Manager Concepts Guide. This will enable you to understand the proper configuration for the business environment, and to understand how to attach your laptop in order to configure the storage system for communications with your management station.

Note: The management station is used to configure and/or verify that the LUNs are set up as desired.

If you need more information about configuring LUNs, refer to the software installation guide or use the GUI help function.

Install your storage manager GUI onto the customer's storage management station (attached via ethernet), and verify that the LUNs are set up as desired.

Proceed to the next section to verify or install the NVSRAM file to the storage system.

Load NVSRAM

1. Verify or install the current NVSRAM (available on the CD in your host attach kit) onto the control module (controller). Refer to the Storage Manager Concepts Guide, which provides the command for the SMclient: `Storage Array >> Download >> NVSRAM`

The following instructions tell how to attach the HBAs and other components onto your Solaris host.

Before you perform these instructions, check to see that you:

- are running Solaris 2.7, 8, or 9 with the most current patches, as required.

- have the appropriate installation kit (HBAs, cables, etc.)

- know the configuration for your customer's site.
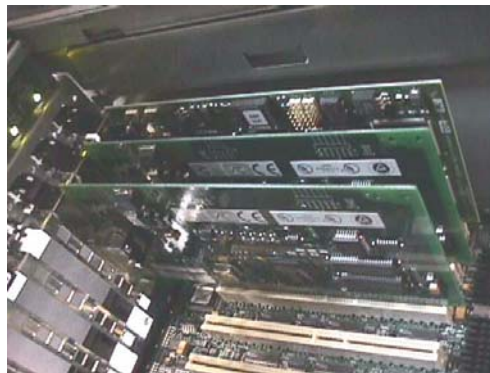
Install the Host Bus Adapters (HBAs)

The following steps explain how to install the host adapters.

1. Quit any applications that are running and halt (down) the operating system.

   Note: If your server supports, Hot Add PCI, refer to your hardware manuals for specific instructions.

2. Power off the Solaris host, as appropriate.

3. Install the host bus adapter onto the host.

   Note: There are various types of Solaris servers. Locate the I/O card, which may be on a card module or behind an access panel. See examples below.

4. Power up the host.

Install HBA Drivers

Install the driver according to the instructions that came with the HBA, and modify the configuration file in the `/kernel/drv` directory, as appropriate.

Refer to the Interop Tool for the latest connectivity information. See page 2.

Install Storage Manager components

Refer to the SANtricity Storage Manager version 9.1 Installation Guide for Solaris. The Storage Manager components are located on the CD that comes with your host attach kit.

Note: Before you reboot (as mentioned at the end of the Installation Guide procedures), install the Fibre Channel cables as instructed in the following section.
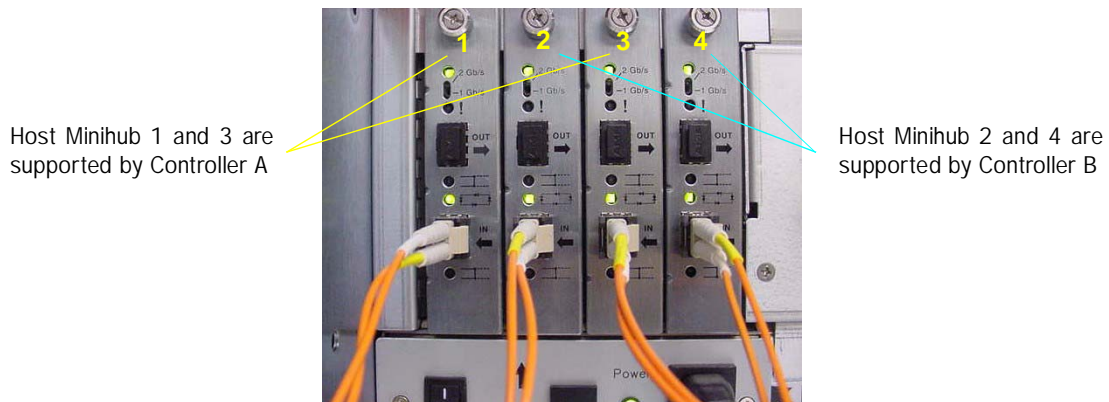
Install Fibre Channel Cable

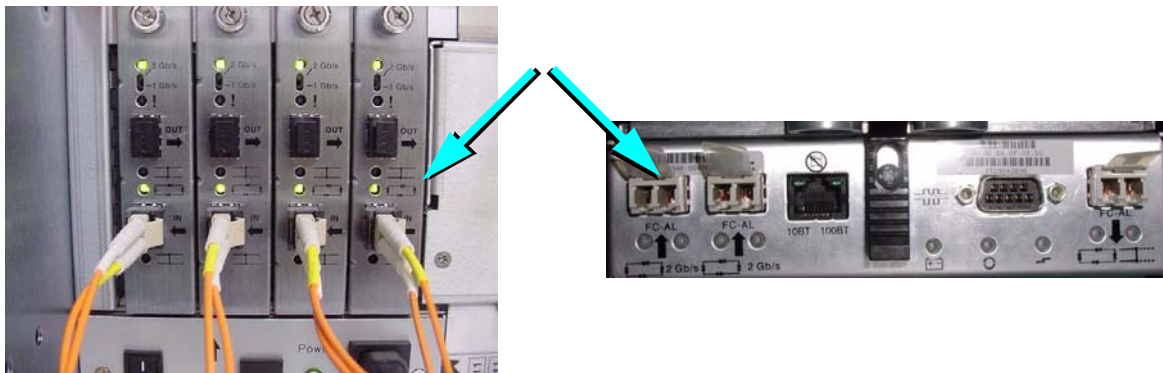Attach cables using the following procedures.

1. Route the fibre channel interface cables between the storage system and the host or per your customer's system configuration plans.

2. Attach the fibre channel cables to the INPUT connectors on the controller's host interface minihubs (or array module host ports).

The following photograph shows the input side of a control module, showing the 2 Gigabit LC to LC Fibre Channel (FC) shortwave (fiber-optic) cable.
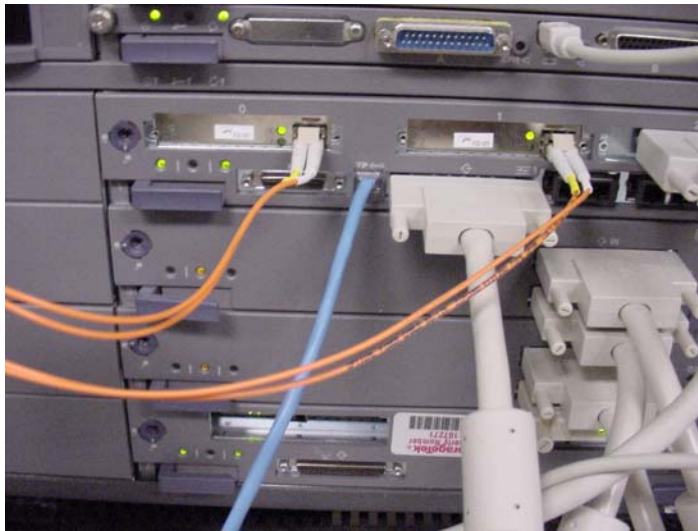
Make sure that your minihub speed is set to correspond with your HBA and switch speed. Also ensure that your host is attached to different controllers, as shown below..

Host Minihub 1 and 3 are supported by Controller A

Host Minihub 2 and 4 are supported by Controller B

Photographs of the storage system host interface ports (on a control module's host minihubs and on an array module's controller FRU) are shown below.

3. Connect the other end of the fibre cable(s) to the Host Bus Adapter (HBA). See example below.

LC to LC Duplex
FC cables

> **Note:** Refer to StorageTek's Interop Tool for the latest connectivity
> information. See .

If necessary, refer to FlexLine's hardware and software Installation Guides, or
to BladeStore's Installation, Operation, and Maintenance Guide, P/N 96080 for
detailed installation information.

Refer to the Control Module/Array Module/Drive Module User's Guides for
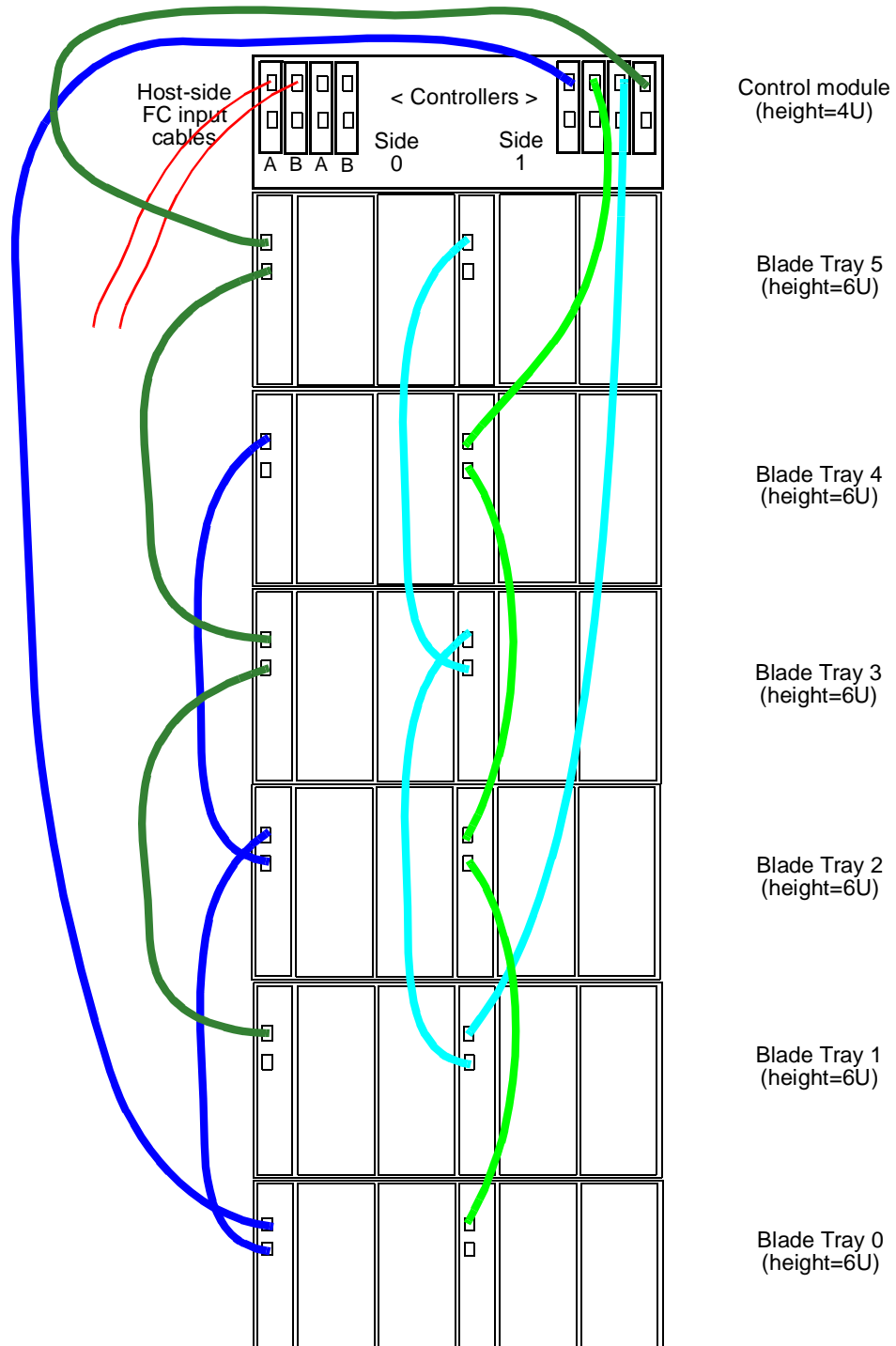servicing information.

> **Note:** The Hardware Cabling Guide provides cable routing information for
> most FlexLine 200/300 Series storage system solutions. It help you
> route the drive interface cables to the drive module ESMs.

Refer also to the F40 Cabinet User's Guide, P/N 96100, and to the Installation
and Mounting Supplement, P/N 95972. These manuals can be found on the
CRC and on the engineering web page at:

```
http://gandalf.stortek.com/ctp/cabinet/
```

The following BladeStore configuration drawing should help you route drive
interface cables to blade modules (blade trays). This is the only storage
system not covered in the Hardware Cabling Guide. This information will help
you do an installation into a non-StorageTek cabinet.

> **Note:** You should always make sure that there are two sets of redundant
> loops (as shown in the following BladeStore example).

Host-side
FC input
cables

< Controllers >

Side
0

Side
1

A B A B

Control module
(height=4U)

Blade Tray 5
(height=6U)

Blade Tray 4
(height=6U)

Blade Tray 3
(height=6U)

Blade Tray 2
(height=6U)

Blade Tray 1
(height=6U)

Blade Tray 0
(height=6U)

Verify the install

1. After running the reconfiguration reboot, verify that you can see the
    volumes by typing the `format` command.

NEED MORE INFORMATION?

www.storagetek.com

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WORLD HEADQUARTERS

Storage Technology Corporation
One StorageTek Drive
Louisville, Colorado 80028 USA
1.800.525.0369